ART. XLI.—*A Manual of Qualitative Analysis.* By ROBERT GALLOWAY, F.C.S. From the fifth rewritten and enlarged London edition, with illustrations. 12mo. pp. 402. Philadelphia: H. C. Lea, 1872.

THAT this work has reached its fifth edition, shows the estimation in which it is held by those for whose use it was intended, and in its enlarged and modified form it is well calculated to familiarize the student with the theories and new chemical notation, while it indoctrinates him in the facts of chemical reaction and research. The special plan of the work in the part devoted to analysis is to combine the principles embraced in each portion with the instructions as to the methods by which the objects of the research are to be effected. To the student who pursues his course without an instructor this has the advantage of compelling attention, not only to the means of research, but also to the reasons for each particular method being strictly followed, instead of allowing him to neglect the rational portions, when from previous education of the mental powers, he does not recognize this necessity and tends to fall in routine practice.

The work is divided into three parts: inorganic, organic, and operative, the last being much the shortest. The position of the third part is out of the usual course and seems misplaced, the student being required in previous portions to perform operations for which no previous instruction has been given, and to use reagents of which he has no information—upon the reliability of which for the purposes directed he can form no opinion.

The first part contains the mode of research for the bases first and then the acids, with the reactions characteristic of each, with tables of comparison in which the narration of the characters of the various bodies are placed in regular order alongside of each other, so that their similarity or differences and the knowledge to be gained from the characters of their reaction may be more readily perceived. Without preliminary remarks on the bases or reactions on which the group is founded, they are introduced by an enumeration of the general properties of each group, and the actions of the reagents to be employed, which are again repeated in the tables of comparison before mentioned; this is followed by directions for the separation and detection of the several members of the group and the precautions which require attention in operating with members of the particular group under examination; the properties of the metals and their compounds are next passed in review, and remarks appended on individual members of the group with reference to special or additional tests. Each group has appended a series of exercises in the form of questions, which are so framed as to test the knowledge of the student and the attention which has been applied to the explanations and their accurate comprehension.

The acids are divided into inorganic and organic, and enumerated separately with the reactions they produce with reagents. They are next thrown into groups, the same number, four, for both divisions, the discriminating behaviour with reagents being first stated, and then succeeded by characteristic tests for each member of the group. Preparation of the substances for examination, with instructions for preliminary examination of liquids and of solids by heat applied in different ways, without or with adjuvants, and whether fixed or volatile and capable of forming films, are next considered; and this portion is concluded by instructions as to effecting the solution of solids, so as to adapt them for analysis, arranged under three divisions, in which considerable additions have been made to the observations contained in former editions of this work.

Part the second is occupied with analysis of organic substances not previously noticed, divided into groups—albuminoid, saccharine, basic, acid, etc.—

under which the properties of the substances included in each are considered with their reactions. Methods of analyzing the blood, urine, and other animal secretions, of ascertaining the character and presence of the saccharine group, and of the principal organic alkalies, are given with accuracy and sufficiently in detail for identification. The conclusion is occupied with the detection of the poisonous alkaloids in organic mixtures.

The third part contains the usual preparatory manipulations of a mechanical and chemical character, together with methods of preliminary testing, apparatus, and instructions concerning the purity and strength of the test solutions with which the experiments detailed in the previous portions of the work are to be performed. The appendix contains instructions on the treatment of residues of the more valuable metals—silver, gold, and platinum—so as to utilize what would be otherwise waste products. R. E. B.

ART. XLII.—*Annual Report of the Surgeon-General United States Army.* 1872.

THIS report gives the average strength of the army during the fiscal year ending June 30th, 1872, as 24,101 white and 2494 coloured troops.

Among the white troops 47,575 were reported on the sick list, being 1974 per 1000 of mean strength, of which number 1671 were on the sick list from disease, and 7310 for wounds, accidents, and injuries. The total number of deaths was 367, of which 268 were from disease, and 99 from wounds, injuries, and accidents. Discharged on "Surgeon's certificate of disability," 846.

Among the coloured troops the total number of cases was 3514, or 1409 per 1000 of mean strength, of which number 2938 were cases of disease, and 576 were wounds, accidents, and injuries. The number of deaths was 54, of which 44 were from disease, and 10 from wounds and injuries. The number of discharges on "Surgeon's certificate of disability" was 76.

The first part of the Medical and Surgical History of the War is, we are pleased to learn, in a state of forwardness, and awaits the action of Congress for its distribution. It is to be hoped that early action will be taken in this matter.

The library of the Surgeon-General's office now contains 19,000 volumes and 7000 pamphlets conveniently arranged in the fire-proof building of the Army Medical Museum, and open to the public under regulations the same as those of the Congressional Library.

There are at present 59 vacancies in the medical corps, and the Surgeon General says: "My previous reports have called your attention to the large number of vacancies existing in the Medical Corps, and the injury to it, and the service, resulting from the prohibition of appointments and promotions. It would require many years to fill the vacancies now existing, as the number of successful candidates rarely exceeds eight or ten in any one year. This is not the greatest evil, for many of the best of our medical officers, having the advantage of the large experience of the late war, disheartened by the faint prospect of advancement, are resigning; and numbers of most desirable candidates, after waiting years for examination, have established themselves in civil practice."

It is by no means creditable to the government that so meritorious and important a class of officers as the Army Surgeons should be so inadequately provided for that but little encouragement is given to them to continue in the service, or for thoroughly educated men to enter it.